

PAPER CARRYING MECHANISM FOR PLOTTER

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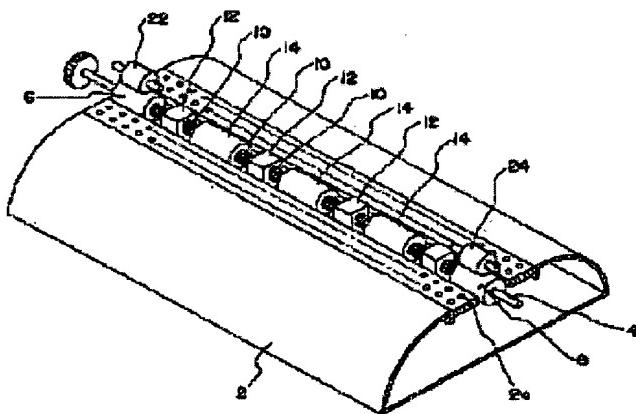
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Abstract of JP11157285

PROBLEM TO BE SOLVED: To eliminate a delay in the carrying of an intermediate part of a paper without weakening a vacuumizing force to the paper, and surely feed the paper at a high precision while joining the paper to a plotting surface. **SOLUTION:** Both sides of a paper on a platen 2 are pinched by driving rollers 6, 8 and pressing rollers 22, 24, and the paper is fed in the X axial direction by the rotation of the driving rollers 6, 8 while applying a vacuumizing force to the paper downward, and in the meantime, a recording head is moved in the Y axial direction which goes across the paper, and a recording is performed on the paper. To a driving shaft 4 which rotate-drives the driving rollers 6, 8, a frictional roller 14 is attached so that it may rotate by interlinking with the driving shaft 4, and an intermediate part of the paper is brought into contact with the frictional surface of the frictional roller 14 by the vacuumizing force, and the driving force of the frictional roller 14 is applied to the intermediate part of the paper.



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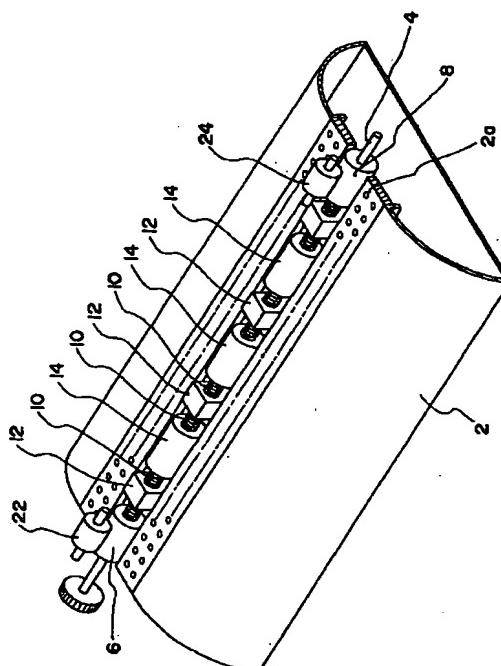
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(54) 【発明の名称】プロッタの用紙搬送機構

(57) 【要約】

【課題】 用紙に対するバキューム力を弱めることなく、用紙の中間部の搬送の遅れを解消し、用紙を作図面に密着させつつ高精度に確実に送ることが出来るようとする。

【解決手段】 駆動ローラ (6) (8) と加圧ローラ (22) (24) とでプラテン (2) 上の用紙 (26) の両側を挟持し、用紙 (26) に下向きにバキューム力を作用させながら駆動ローラ (6) (8) の回転によって用紙 (26) をX軸方向に送る一方、記録ヘッド (18) を用紙 (26) を横切るY軸方向に移動して用紙 (26) に記録を行う。駆動ローラ (6) (8) を回転駆動する駆動軸 (4) にこれと連動して回転するように摩擦ローラ (14) を取り付け、この摩擦ローラ (14) の摩擦面にバキューム力により用紙 (26) の中間部を当接させ、用紙 (26) の中間部に摩擦ローラ (14) の駆動力を作用させる。



【特許請求の範囲】

【請求項1】 駆動ローラと加圧ローラとでプラテン上の用紙の両側を挟持し、該用紙に下向きにバキューム力を作用させながら前記駆動ローラの回転によって用紙をX軸方向に送る一方、記録ヘッドを用紙を横切るY軸方向に移動して用紙に記録を行うプロッタにおいて、前記用紙の両側の中間に位置させて前記駆動ローラと同軸上に摩擦ローラを配置し、該摩擦ローラを前記駆動ローラと同期回転駆動させ、前記摩擦ローラの摩擦面にバキューム力により前記用紙の中間部を当接させ、該用紙の中間部に前記摩擦ローラの駆動力を作用させるようにしたことを特徴とするプロッタの用紙搬送機構。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 本発明はインクジェットプロッタにおける用紙搬送機構に関する。

【0002】

【従来の技術】 駆動ローラと加圧ローラとでプラテン上の用紙の2点両側を挟持し、該用紙にプラテン上で浮かないようにするために下向きにバキューム力を作用させながら前記駆動ローラの回転によって用紙をX軸方向に送る一方、記録ヘッドを用紙を横切るY軸方向に移動して用紙にプラテンの作図面上で記録を行うプロッタが従来知られている。

【0003】

【発明が解決しようとする課題】 プラテンの作図面上で用紙が浮かないように用紙にバキューム力を作用させた構成の場合、バキューム力が強過ぎると、用紙がプラテンに密着し過ぎ、用紙が送れなくなってしまう。そのため、バキューム力を弱めると、用紙の中間部に浮きが生じてしまい、高精度の作図が行えないという問題点があった。本発明は上記問題点を解決することを目的とするものである。

【0004】

【課題を解決するための手段】 上記目的を達成するため、本発明は、駆動ローラと加圧ローラとでプラテン上の用紙の両側を挟持し、該用紙に下向きにバキューム力を作用させながら前記駆動ローラの回転によって用紙をX軸方向に送る一方、記録ヘッドを用紙を横切るY軸方向に移動して用紙に記録を行うプロッタにおいて、前記用紙の両側の中間に位置させて前記駆動ローラと同軸上に摩擦ローラを配置し、該摩擦ローラを前記駆動ローラと同期回転駆動させ、前記摩擦ローラの摩擦面にバキューム力により前記用紙の中間部を当接させ、該用紙の中間部に前記摩擦ローラの駆動力を作用させるようにしたものである。

【0005】

【発明の実施の形態】 以下に本発明の実施の形態を、添付した図面を参照して詳細に説明する。図1において、(2)はインクジェットプロッタのプラテンであり、用

10 紙ガイド面とY軸方向に延びる帯状の作図面(2a)とから構成されている。プラテン(2)の中央部にはY軸方向に開口部が形成され、該開口部の下に、Y軸方向に延びる駆動軸(4)が回転可能に支持されている。前記駆動軸(4)は、コントローラによって制御されるXモータ(図示省略)に連結している。前記駆動軸(4)には、一対の駆動ローラ(6)(8)が嵌合している。一方の駆動ローラ(8)は、駆動軸(4)に固定され、他方の駆動ローラ(6)は、駆動軸(4)に沿ってスライド自在に且つ駆動軸(4)に回転方向に連動するように駆動軸(4)に嵌合している。

【0006】 前記駆動軸(4)の駆動ローラ(6)

(8)間には、駆動軸(4)に遊嵌されたコイルばね(10)をはさんで、ガイド部材(12)と摩擦ローラ(14)が交互に複数個嵌挿配置されている。前記ガイド部材(12)は、直方体から成り、駆動軸(4)に対して回転自在且つ長手方向にスライド自在に嵌挿され、各々の底面が、駆動軸(4)の下方に、これに平行に配設されたガイド面(図示省略)にスライド自在に載置されている。

20 【0007】 前記ガイド部材(12)の上面は、用紙案内面を構成している。前記摩擦ローラ(14)の表面は、ゴム摩擦面(14a)あるいはグリット面(粒状凸起面)(14b)から構成され、駆動軸(4)に対して軸方向にスライド自在に且つ回転方向に連動するよう駆動軸(4)に嵌合している。前記摩擦ローラ(14)の各表面とガイド部材(12)の各用紙案内面の高さのレベルは、前記作図面(2a)の高さのレベルと略同一に設定されている。

30 【0008】 前記プラテン(2)の上方には、Y軸方向に延びるYレール(16)が配設され、該Yレール(16)にインクジェット記録ヘッド(18)が搭載されたカーソル(20)が移動可能に取り付けられている。前記カーソル(20)は、コントローラによって制御されるYモータに動力伝達機構を介して連結し、Yレール(16)に沿って移動制御されるように構成されている。

40 【0009】 前記Yレール(16)には、揺動アーム(図示省略)を介して加圧ローラ(22)(24)が回転自在に支承され、該加圧ローラ(22)(24)は、印字時用紙(26)の上から対応する駆動ローラ(6)(8)に弾接し、用紙(26)の両側をグリップするように構成されている。可動側の駆動ローラ(6)は、プラテン(2)上の用紙(26)の幅に応じて、駆動軸(4)上を、移動させ、任意の位置で、駆動軸(4)に固定できるように構成されている。この可動側駆動ローラ(6)の、駆動軸(4)に沿った移動に伴って、コイルばね(10)が圧縮あるいは伸長し、ガイド部材(12)、摩擦ローラ(14)が駆動軸(4)に沿ってスライド移動し、これらの間隔が適正な間隔に自動的に保持

される。

【0010】前記可動側駆動ローラ(6)の移動に応じてこれに対応する加圧ローラ(22)もYレール(16)に沿って移動させることができるように構成されている。前記プラテン(2)の内部には、吸気装置(28)が配置され、プラテン(2)の印字施行部分及びその周囲に、バキューム力が作用するように構成されている。前記プラテン(2)の所定範囲には、前記バキューム力を、用紙(26)に作用させるために、多数の吸気孔が穿設されている。

【0011】上記した構成において、両側が駆動ローラ(6)(8)と加圧ローラ(22)(24)とで挟持されたプラテン(2)上の用紙(26)は、駆動ローラ(6)(8)の、間欠回転によって、下向きにバキューム力を受けながら図2中、左方向に送られる。一方、記録ヘッド(18)は、Yレール(16)に沿って用紙(26)を横切る方向に移動し、用紙(26)に作図データが印字される。印字動作中、用紙(26)の中間部は、バキューム力によって摩擦ローラ(14)の表面に圧接し、摩擦ローラ(14)の、駆動ローラ(6)(8)と連動した同期回転運動によって、図2中左方向に強制搬送させられる。

【0012】

【発明の効果】本発明は上述の如く構成したので、用紙

に対するバキューム力を弱くすることなく、用紙を作図面に密着させて円滑且つ確実に送ることができる効果がある。

【図面の簡単な説明】

【図1】本発明の要部の説明的外観図である。

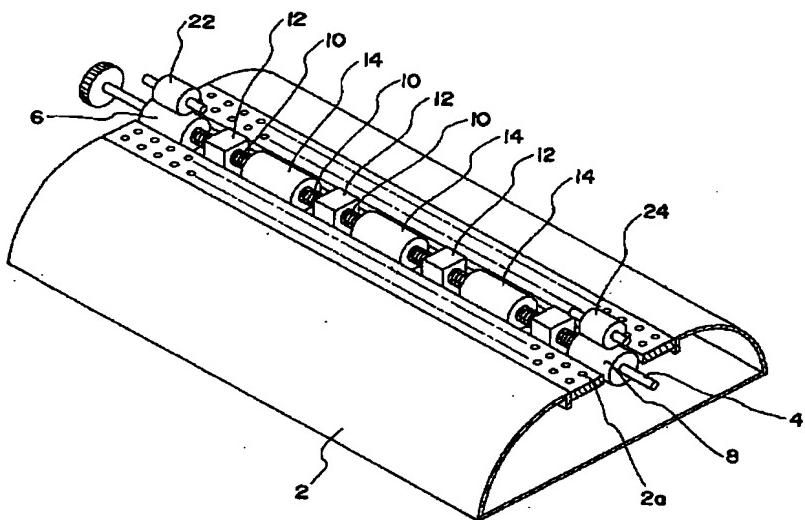
【図2】プロッタの説明的側面図である。

【図3】プロッタの説明的側面図である。

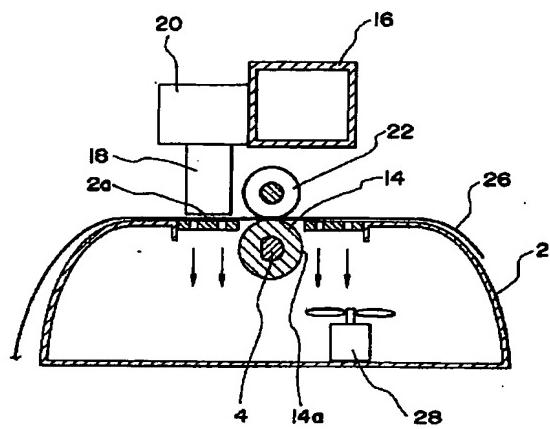
【符号の説明】

2	プラテン
10	2 a 作図面
20	4 駆動軸
22	6 駆動ローラ
24	8 駆動ローラ
26	10 コイルばね
28	12 ガイド部材
	14 摩擦ローラ
	16 Yレール
	18 記録ヘッド
	20 カーソル
	22 加圧ローラ
	24 加圧ローラ
	26 用紙
	28 吸気装置

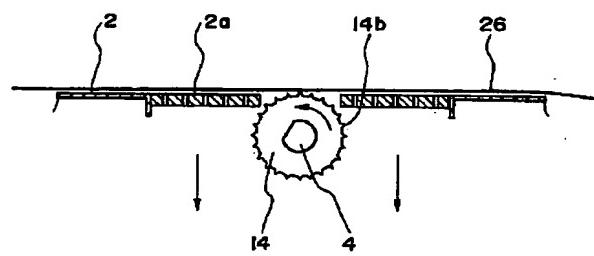
【図1】



【図2】



【図3】



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CLAIMS

[Claim(s)]

[Claim 1] While sending a form to X shaft orientations by rotation of said driving roller, pinching the both sides of the form on a platen with a driving roller and a pressurization roller, and making the vacuum force act on this form downward In the plotter which moves a recording head to Y shaft orientations which cross a form, and records on a form Make it located in the middle of the both sides of said form, and a friction roller is arranged on said driving roller and same axle. The form conveyance device of the plotter which is made to carry out the synchronous rotation drive of this friction roller with said driving roller, and is characterized by making the pars intermedia of said form contact the friction surface of said friction roller according to the vacuum force, and making it make the driving force of said friction roller act on the pars intermedia of this form.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]**[0001]**

[Field of the Invention] This invention relates to the form conveyance device in an ink jet plotter.

[0002]

[Description of the Prior Art] The two-point both sides of the form on a platen are pinched with a driving roller and a pressurization roller, and while sending a form to X shaft orientations by rotation of said driving roller, making the vacuum force act downward in order to make it not float in this form on a platen, the plotter which moves a recording head to Y shaft orientations which cross a form, and records on a form on the plot side of a platen is known conventionally.

[0003]

[Problem(s) to be Solved by the Invention] If the vacuum force is too strong in a configuration of having made the vacuum force act on a form so that a form may not float on the plot side of a platen, a form will stick to a platen too much and it will become impossible to send a form. Therefore, when the vacuum force was weakened, the float arose in the pars intermedia of a form and there was a trouble that a highly precise plot could not be performed. This invention aims at solving the above-mentioned trouble.

[0004]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, this invention pinches the both sides of the form on a platen with a driving roller and a pressurization roller. In the plotter which moves a recording head to Y shaft orientations which cross a form, and records on a form while sending a form to X shaft orientations by rotation of said driving roller, making the vacuum force act on this form downward. Make it located in the middle of the both sides of said form, and a friction roller is arranged on said driving roller and same axle. Carry out the synchronous rotation drive of this friction roller with said driving roller, the pars intermedia of said form is made to contact the friction surface of said friction roller according to the vacuum force, and it is made to make the driving force of said friction roller act on the pars intermedia of this form.

[0005]

[Embodiment of the Invention] The gestalt of operation of this invention is explained with reference to the attached drawing below at a detail. In drawing 1, (2) is the platen of an ink jet plotter and it consists of a form guide side and a band-like plot side (2a) which extends in Y shaft orientations. Opening is formed in the center section of the platen (2) at Y shaft orientations, and the driving shaft (4) prolonged in Y shaft orientations under this opening is supported pivotable. Said driving shaft (4) is connected with X motor (illustration abbreviation) controlled by the controller. The driving roller (6) of a pair and (8) have fitted into said driving shaft (4). One driving roller (8) was fixed to the driving shaft (4), and the driving roller (6) of another side has fitted into a driving shaft (4) so that a driving shaft (4) may be interlocked with free [a slide] in accordance with a driving shaft (4) in a hand of cut.

[0006] Between the driving roller (6) of said driving shaft (4), and (8), the coiled spring (10) which fitted loosely into the driving shaft (4) is inserted, and fit-in arrangement of two or more guide members (12) and friction rollers (14) is carried out by turns. Said guide member (12) consists of a rectangular parallelepiped, it is fitted in free [rotation] and free [the slide to a longitudinal direction] to a driving shaft (4), and each base is laid in the guide side (illustration abbreviation) in

which the driving shaft (4) was arranged in parallel with this caudad free [a slide].

[0007] The top face of said guide member (12) constitutes the form slideway. The front face of said friction roller (14) consisted of a rubber friction surface (14a) or a shot side (granular projection side) (14b), and it has fitted into a driving shaft (4) so that a hand of cut may be interlocked with free [the slide to shaft orientations] to a driving shaft (4). the level of the height of each front face of said friction roller (14), and each form slideway of a guide member (12) -- the level of the height of said plot side (2a), and abbreviation -- it is set up identically.

[0008] Y rail (16) prolonged in Y shaft orientations is arranged above said platen (2), and the cursor (20) by which the ink jet recording head (18) was carried in these Y rails (16) is attached in it movable. Said cursor (20) is connected with Y motor controlled by the controller through a power transmission device, and it is constituted so that migration control may be carried out along with Y rail (16).

[0009] Bearing of the rotation of a pressurization roller (22) and (24) is made free through a swinging arm (illustration abbreviation), and this pressurization roller (22) and (24) are ****(ed) to the driving roller (6) which corresponds from a form (26) at the time of printing, and (8), and they are constituted by said Y rail (16) so that the both sides of a form (26) may be gripped. According to the width of face of the form (26) on a platen (2), the driving roller (6) of a movable side moves a driving shaft (4) top, and it is the location of arbitration, and it is constituted so that it can fix to a driving shaft (4). It follows on migration in alignment with the driving shaft (4) of this movable side driving roller (6), coiled spring (10) compresses or develops, a guide member (12) and a friction roller (14) carry out slide migration in accordance with a driving shaft (4), and these spacing is held automatically at proper interval.

[0010] It is constituted so that the pressurization roller (22) which corresponds for migration of said movable side driving roller (6) responding can be moved along with Y rail (16). Inside said platen (2), a suction system (28) is arranged, and it is constituted so that the vacuum force may act on the printing enforcement part of a platen (2), and its perimeter. In order to make said vacuum force act on a form (26), many inhalation-of-air holes are drilled in the predetermined range of said platen (2).

[0011] In the above-mentioned configuration, the form (26) on the platen (2) by which both sides were pinched by the driving roller (6), (8), the pressurization roller (22), and (24) is sent leftward among drawing 2 by intermittent rotation of a driving roller (6) and (8), receiving the vacuum force downward. On the other hand, a recording head (18) moves in the direction which crosses a form (26) along with Y rail (16), and plot data are printed by the form (26). The pressure welding of the pars intermedia of printing working and a form (26) is carried out to the front face of a friction roller (14) according to the vacuum force, and it is made to carry out forcible conveyance in synchronous rotation interlocked with the driving roller (6) of a friction roller (14), and (8) by the left in drawing 2.

[0012]

[Effect of the Invention] The effectiveness that a form can be stuck to a plot side and can be sent smoothly and certainly consists without weakening the vacuum force over a form, since this invention was constituted like ***.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the explanatory external view of the important section of this invention.

[Drawing 2] It is the explanatory side elevation of a plotter.

[Drawing 3] It is the explanatory side elevation of a plotter.

[Description of Notations]

- 2 Platen
- 2a Plot side
- 4 Driving Shaft
- 6 Driving Roller
- 8 Driving Roller
- 10 Coiled Spring
- 12 Guide Member
- 14 Friction Roller
- 16 Y Rail
- 18 Recording Head
- 20 Cursor
- 22 Pressurization Roller
- 24 Pressurization Roller
- 26 Form
- 28 Suction System

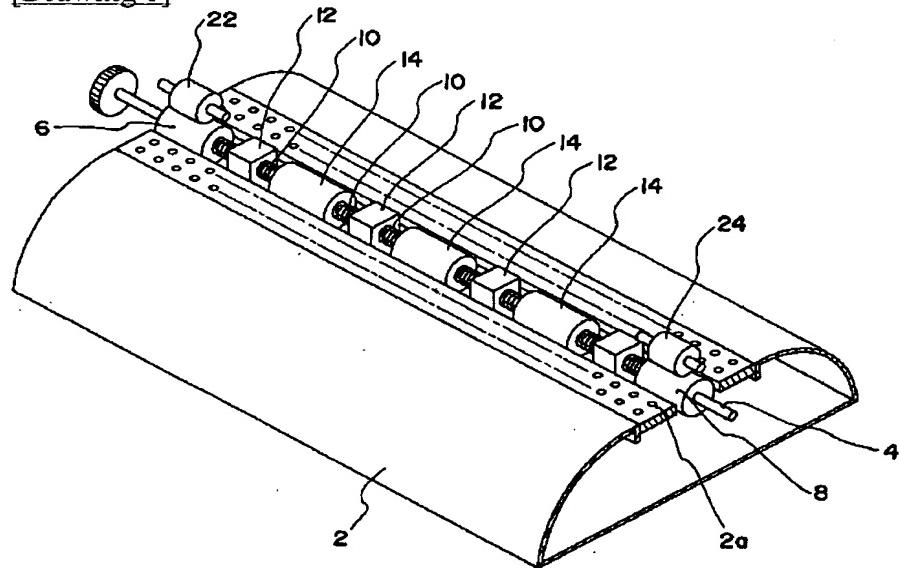
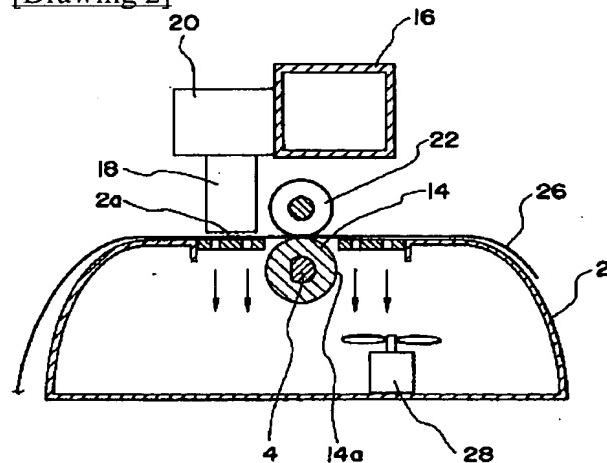
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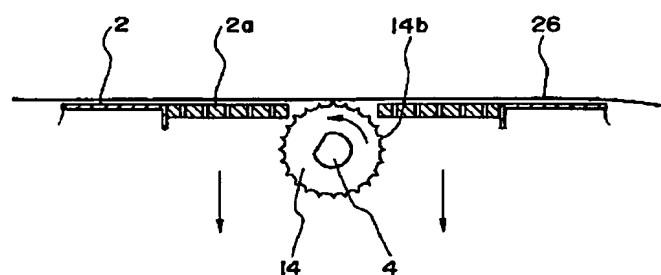
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DRAWINGS

[Drawing 1]**[Drawing 2]****[Drawing 3]**



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